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ABSTRACT

The experience of marital infertility is a major biosocial life crisis that also represents a serious threat to the development of psychosocial generativity. Psychological studies of the consequences of involuntary infertility, however, are rare. A study was undertaken to identify variations in the coping patterns used by men who have experienced infertility in their first marriage and to assess the impact of variations in infertility coping strategies upon the man's subsequent success in achieving generativity, the seventh phase of Erik Erikson's model of development. Of a sample of 343 married men, prospectively studied for four decades, 52 (15.2%) experienced infertility in their first marriage. Styles of coping with their difficulty in achieving parenthood were considered across three longitudinal phases: initial substitutes; subsequent parenting resolutions; and final marital outcomes. The ability of coping strategies used in earlier phases to predict the styles used in later phases of adjustment was considered, as was the relationship between coping strategies and the subsequent achievement of generativity as defined by Erik Erikson. Results indicated that the men's parenting resolutions, marital outcomes, and midlife achievement of psychosocial generativity were predictable at statistically significant levels, based on knowledge of their prior infertility coping strategies and outcomes. Their initial style of using parenting-like substitutes was especially powerful in predicting subsequent coping strategies and the achievement of generativity at midlife. A 62-item reference list and three tables are included. (Author/NB)

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Abstract

Of a sample of 343 married men, prospectively studied for four decades, 52 (15.2%) experienced infertility in their first marriage. Styles of coping with their difficulty in achieving parenthood were considered across three longitudinal phases: initial substitutes; subsequent parenting resolutions; and final marital outcomes. The ability of coping strategies used in earlier phases to predict the styles used in later phases of adjustment was considered, as was the relationship between coping strategies and the subsequent achievement of generativity as defined by Erik Erikson. Results indicated that the men's parenting resolutions, marital outcomes, and midlife achievement of psychosocial generativity were predictable at statistically significant levels, based on knowledge of their prior infertility coping strategies and outcomes. Their initial style of using parenting-like substitutes was especially powerful in predicting subsequent coping strategies and the achievement of generativity at midlife.

How Husbands Cope When Pregnancy Fails:
A Longitudinal Study of Infertility and Psychosocial Generativity

The experience of marital infertility is a major biosocial life crisis that also represents a serious threat to the development of psychosocial generativity. Despite the fact that it is experienced by one out of every six couples--in excess of ten million people in the United States--psychological studies of the consequences of involuntary infertility have been rare. We do know that infertility has a profound effect, for instance, on women's self-concept, self-esteem, body image, locus of control, and identity in general; about men, however, we know even less.

The purpose of this study is twofold. First, we will identify variations in the coping patterns used by men who have experienced infertility in their first marriage. Second, we will assess the impact of variations in infertility coping strategies upon the men's subsequent success in achieving generativity, the seventh phase of Erik Erikson's model of development.

Prior Psychological Research

The psychological literature on the experience of infertile women in particular, and the medical literature on infertility in general, have been thoroughly reviewed elsewhere (Feuer, 1983; MacNab, 1985; Mazor & Simons, 1984; Manning, 1977; Noyes & Chapnick, 1964; Simons, 1982; Stangel, 1979). This review will focus on those studies that have considered the psychological experience of men, either as individual subjects or as a member of an infertile couple.

Mahlstedt (1985) offers a model for conceptualizing the psychological aspects of infertility and describes the "psychological component" of this

crisis as beginning immediately -- as soon as "a couple realizes they are not conceiving according to their plan" (p. 336). There is a sense of shock, disbelief, and helplessness--a feeling that their ability to control their lives and choose their destiny has been suddenly denied (Blais, 1979; Howard & Schultz, 1979; Kraft et al., 1980; Mahlstedt, 1985). MacNab (1985) studied the experience of 30 infertile men and found that for many of them, "this was the biggest interruption of their mastery of the world since childhood" (p. 157).

Men's feelings and reactions during this crisis may differ from those of their spouses. Kraft and colleagues (1980) examined the psychological experiences of childless couples applying to adoption agencies and found that men more often found the pain of infertility difficult to discuss. Mahlstedt (1985) suggests that women, on the other hand, often talk a great deal with their husbands about their disappointment. In such instances, "husbands, who feel powerless to take away the pain, sometimes stop listening" (p. 337). Such variations in coping styles can result in a polarization between spouses that can contribute to feelings of isolation and frustration within marriage.

Several articles describe the significant sense of loss that is experienced in infertility as a key factor in the depression felt by many men and women (Blais, 1979; Mahlstedt, 1985; Mazor, 1979). Feuer (1983) studied the experiences of 93 infertile men. The results indicated that, regardless of the reason for their infertility, the infertile subjects experienced some amount of depression. In further interviews with 20 of the 93 subjects, Feuer found that each man was able to identify some aspect of his life that was negatively affected by his infertility.

Men also are likely to associate infertility with their masculinity or male sexual identity (Humphrey, 1977; Mahlstedt, 1985). Kraft and

associates (1980) found that, in the childless couples they studied, "most men experience infertility as a blow to their virility, masculinity and self-image" (p. 621). Mazor (1979) writes that, regardless of the cause of the infertility, the majority of husbands diagnosed as infertile initially feel damaged and defective as men. Mazor and Simons (1982) also conclude that poor body image and low self-esteem, in turn, can foster a general sense of unproductiveness in other areas of life.

In light of the emotional stress that infertility brings with it, it is not surprising that infertility may have a negative impact on some marriages, making them less stable (MacNab, 1985; Mazor, 1979; Mazor & Simons, 1984; Simons, 1982). The infertile partner often fears actual or emotional abandonment, or that the fertile spouse will resentfully remain in the relationship. Thus, it is not uncommon for infertile spouses to make offers of divorce to their fertile partners. Most infertile couples also experience a temporary loss of sexual desire or sexual performance during the course of treatment, no matter which partner has the medical problem (Mazor, 1979; Mazor & Simons, 1984).

A strengthening of the marital bond has also been noted as a potential outcome of the infertility crisis, especially among those couples who viewed their problem as a "common bond regardless of who had the physical impairment," showed empathy for one another, and shared their feelings (Kraft et al., 1980, p. 625). MacNab's (1985) study of infertile men found that positive changes in marriages that survived the infertility crisis "tended to be associated with the beneficial effects of having overcome a life crisis together" as spouses (p. 123). These men described their marriages as more adaptable and strengthened because of the infertility experience.

Finally, these variations in the impact of infertility upon a man and his marital relationship may be associated with the duration of the infertility. MacNab (1985) reports that the longer the infertility crisis continues, the greater the negative effect on "all systems of life" for the men involved (p. 156). Feuer (1983) found that men no longer trying to conceive were less depressed than those who were still attempting pregnancy. He suggests that the subjects no longer pursuing conception had come to some resolution of their infertility, allowing them to move forward with their lives.

In summary, cross-sectional research to date has vividly documented the psychosocial stress resulting from infertility, but little is known about variations in coping strategies, especially among men. No research to date has longitudinally documented the phases of coping, variations in coping strategies used during each phase, or the long-term impact upon a person's subsequent psychosocial adult development.

Theoretical Orientation

This study utilizes longitudinal data to question the short-term and long-term implications of biosocial infertility upon psychosocial generativity. The perspective underlying our study is Erik Erikson's model of the life cycle, particularly his seventh phase of generativity, during which an individual is "primarily concerned in establishing and guiding the next generation" (1950, p. 267). Psychosocial generativity primarily involves being responsible for and caring for other younger adults--mentoring, providing leadership, and generally contributing to the strength and continuity of subsequent generations. Beyond procreativity, that is, it includes productivity and creativity. Most broadly, it includes any caring activity that contributes "to the life of the generations" (1975, p. 243), such as the generation of new or more mature persons, products,

ideas, or works of art.

Parenting one's own children overlaps, but is not fully synonymous with generativity. The former usually starts during early adulthood and continues until the death of the parent, while the generativity phase usually begins at around age 40 and remains predominant until late adulthood. Furthermore, even during the mature years, not all parenting is "generative" parenting (Erikson, 1982). Nevertheless, parenthood is the "the first, and for many, the prime generative encounter" (Erikson, 1964, p. 130; cf. Menning, 1977, pp. 94-97). Erikson has thus suggested that the achievement of generativity is made more difficult, although not impossible, without the experience of parenting children (1950, 1969). Eriksonian theorists have been even more explicit in suggesting that parenting may be a necessary (although not sufficient) condition for the subsequent achievement of generativity (cf. Anthony & Benedek, 1970; Doyle, 1985; Farrell & Rosenberg, 1981; MacNab, 1985). Erikson's work further suggests that the achievement of generativity is essential in the course of adult development if one is to avoid a "pervading sense of stagnation and personal impoverishment" where the individual begins to indulge himself as if he were his one and only child (1950, p. 267; cf. 1968, pp. 138, 278; Snarey, Kohlberg, & Noam, 1983).

Hypothesis

To examine the impact of infertility upon men's psychosocial development, we asked two questions. How do men vary in terms of how they cope with the problem of infertility? Does infertility in general, and variations in infertility coping strategies and outcomes in particular, affect the subsequent achievement of psychosocial generativity at midlife? We hypothesize that variations in the achievement of fatherhood during early adulthood will be associated with subsequent variations in the successful

achievement of generativity during middle adulthood.

Method

Subjects

The subjects, commonly referred to as the Glueck or Core City Sample, are part of an ongoing 40-year longitudinal study begun in the early 1940s by Sheldon and Eleanor Glueck (1950, 1966, 1968). The sample originally included 500 nondelinquent junior high school boys (ages 14 +/- 2 years) from the Boston area who served as a control group for a group of 500 delinquent boys who had been remanded to reform school. The control group (our sample) and the delinquents had been carefully matched for I.Q., ethnicity, age, and residence in high crime neighborhoods. Although at age 14 +/- 2 years, the control group had been chosen for absence of obvious delinquency, eventually 19% of the controls spent some time in jail, a datum suggesting that the sample is only modestly biased toward good behavior.

The Gluecks reinterviewed over 90% of the subjects (N = 456) at age 25 (ca. 1955) and again at age 31 (ca. 1962). George Vaillant and his colleagues have followed the 456 nondelinquent control subjects into middle age (ca. 1978) with a 2-hour interview at age 47 +/- 2 years and subsequent biennial questionnaires (Vaillant, 1983; Vaillant & Milofsky, 1980; Vaillant & Vaillant, 1981; Snarey & Vaillant, 1985).

Our sample has been affected by attrition and by the requirements of this study. First, for raters to determine psychosocial maturity in adulthood, as defined by Erik Erikson, only subjects with complete clinical interviews at age 47 could be used. Second, only married subjects were of interest to this present study. These restrictions reduced the sample from 456 to 343 cases. When we compared these 343 men to the excluded 113, aside from the expected differences in mortality, there was significant bias in

only one general area. Attrition was more common among men from multiproblem families, who had in youth and adult life been the most antisocial, and who in adult life were the most severely mentally ill. These 343 men, however, did not differ from the 113 excluded men in terms of I.Q., ethnicity, childhood emotional problems, or environmental strengths.

The files of the 343 men were examined for evidence of a fertility problem. Those who experienced infertility in their first marriage represent the core sample for this study. Those who did not experience infertility served as a comparison group. Since the comparisons and conclusions of this article are based on comparisons among individuals remaining in the study, sample attrition should not seriously prejudice the findings.

Rating Scales

The subjects were rated on the following variables. Each category of variables was rated by judges blinded to other aspects of the subjects' lives.

Infertility. The subjects were evaluated for the presence of infertility in their first marriage. A couple was considered to have primary infertility if a successful pregnancy had not occurred after they had tried for 18 months or more. This definition is slightly more conservative, and perhaps more reliable (cf. Potter & Parker, 1964; Menning, 1977), than that of the American Fertility Society, which defines an infertile couple as one that has not achieved a successful pregnancy after having sexual relations for 12 months or more without using contraception (cf. Menning, 1977; Taymor, 1969). A positive rating indicates that the files contain a self-report of difficulty or inability regarding achieving a successful pregnancy, or the presence of clear medical evidence of a fertility problem, or both a self-report and independent medical evidence.

To establish a couple's fertility, all 343 cases were examined by two independent judges. Their ratings were compared and, for those cases in which there was disagreement (ca. 6%), the files were restudied and a final rating was made by consensus. For those subjects who were rated as infertile, 50% of the judgments were based solely on self-reports, 12% were based solely on their medical records, and 38% were based on both a self-report and medical records. Thus, a clear self-report of a fertility problem was present in 88% of the cases and independent medical evidence was present in 50% of the cases. Cases of secondary infertility (failure to conceive after the successful birth of the first child) were not included in this study.

Medical context. Those cases rated as infertile were also rated on the medical context of their experience. These ratings were based on a subject's interviews and medical files at ages ca. 25, 31, and 47. Twenty of the cases were randomly selected and rerated by a second blinded judge to assess interrater reliability.

(1) Medical diagnosis. A judgment, based on the available self-report and medical evidence, was made on whether the medical problem resided in: (a) the wife, (b) the husband, or (c) both the husband and wife. The third category also included those cases for whom their physician had been unable to identify a specific medical problem. The interrater reliability was .69 for this variable.

(2) Medical prognosis. A judgment was made as to whether the medical evidence suggested that there was: (a) no realistic possibility for an eventual conception and successful birth, (b) uncertain or unclear medical hope of an eventual successful pregnancy, or (c) a good possibility of an eventual conception and successful birth. The interrater reliability was .60 for this variable.

(3) Years without children. Each subject was rated on the number of years devoted to trying to have children, that is, the number of years before an eventual birth, adoption, or other resolution. The interrater reliability was .81. For contingency table analysis, the following three categories were used: (a) four years or less; (b) five to eight years, and (c) nine to twelve years. These categories were chosen after examination of the continuous data indicated that there were natural breaks in the distribution between the fourth and fifth year and between the eighth and ninth year, and that a fairly equal number of subjects fell into the three resulting categories.

Social context. To control for social class as a background variable, the following two indices were calculated.

(1) Adult social class. This rating was based on Hollingshead's two-factor index which yields a 5-point scale: I. upper middle class, II. middle class, III. lower middle class, IV. working class, and V. lower class (Hollingshead, 1959, 1975; Hollingshead & Redlich, 1958). The index is based on a combination of occupational and educational achievement levels as indicated in the subjects' interview at age 47. The interrater reliability was .93.

(2) Childhood social class. This rating is an index of the subjects' parents' social class. It is based on the Hollingshead four-factor index (1975), which is identical to the above measure except that it also takes into consideration marital status and sex in order to yield a social class position for a family unit. It is essentially an average of a subject's father's and mother's social position as recorded in interviews held with their parents when the subjects were 14 years old. Interrater reliability was .71.

Infertility coping strategies. We concluded that men who experience the crisis of infertility typically go through at least three primary phases in their coping process. This finding is based on our clinical observations and on the unblinded examination of the files of infertile Glueck subjects not included in this study because their age 47 interview was incomplete. First, men choose some substitute activity to help them cope with the inevitable waiting that occurs after the problem is discovered. Second, they eventually choose a parenting solution and often speak of it as the resolution to their problem. Finally, their subsequent marital outcome, in terms of divorce or remaining married, may represent a final resolution. The subjects in this study were thus rated on these three phases to assess the various social strategies used to cope with the problem of infertility. The first two ratings were based on their interviews at age 25 and age 31, and the last rating was based on their interview at age 47.

(1) Initial substitutes. The men were rated for their primary or dominant style of using substitutes after the discovery of a fertility problem and prior to a final resolution such as a birth or adoption. The following substitution styles were identified: (a) substituted self by narcissistiely treating himself as if he were his only child (e.g., intensive preoccupation with personal body building, health foods, macho sexuality); (b) substituted a nonhuman object by treating it as if it were his pride and joy or referring to it as his "baby" (e.g., parental-like devotion to house, pet, garden, or car); (c) substituted a child or other appropriate human by becoming involved in vicarious childrearing activities with the children of others (e.g., leading a youth group, teaching Sunday school, becoming the equivalent of a Big Brother to a neighborhood boy). Twenty randomly selected cases were rerated by a second blinded judge to assess interrater reliability. The interrater reliability was .71 for their

initial substitution style.

(2) Parenting resolution. The men were also rated on the way in which they ultimately resolved their desire to be parents. This variable included the following categories: (a) childless--the couple failed to conceive and voluntarily decided to live without children instead of adopting a child; (b) birth parent--the couple decided to wait for an eventual birth, rather than choosing adoption, and did eventually achieve a successful birth; (c) adoptive parent--the couple brought a child into their family by adoption. The interrater reliability was .95 for the subjects' parenting resolution.

(3) Marital outcome. Finally, the subjects were rated on the long-term outcome of their first marriage at their last interview time in terms of being divorced or having remained married. Divorce, theoretically, could also be a decision that is concurrent with or prior to the phase-two parenting decision but, in our sample, this pattern did not occur. The interrater reliability was 1.00 on this variable. Subsequent patterns of remarriage after divorce might also be part of a subject's coping strategy, but the sample size does not permit us to distinguish meaningfully among divorces.

Psychosocial development. Erik Erikson's model of the life cycle was used to assess each subject's phase of development, during both boyhood and adulthood.

(1) Boyhood psychosocial development. To first control for variations in psychosocial development prior to the experience of infertility, we used the subjects' interviews at age 14. Each subject was assessed for the achievement of industry, Erik Erikson's fourth stage of development, as follows: (a) industry well achieved, (b) industry moderately achieved, and (c) industry poorly achieved. Interrater reliability ranged from .70 to

.91. Additional information on the rating scale on which this variable is based is available elsewhere (Vaillant & Vaillant, 1981).

(2) Adulthood psychosocial development. Based on his age 47 interview, each man was assessed for stage of psychosocial development as defined by Erik Erikson. Because our hypothesis only related to the achievement of stage 7, generativity, Erikson's scale was dichotomized as follows: (a) failed to achieve generativity, or (b) generativity achieved. Men were rated as generative if they demonstrated a clear capacity for establishing and guiding the next generation through their sustained responsibility for the growth, well-being, and leadership of other adults. Depending on the opportunities provided, this could mean serving as a consultant, guide, coach, or mentor to younger adults or to the larger society. Additional information on the rating scale on which this variable is based is available elsewhere (Vaillant & Milofsky, 1980).

Statistical Procedures

Due to the nominal nature of the data, contingency table analysis was primarily relied upon. Chi-square or Yates corrected chi-square was used as a measure of significance and Cramer's V or Phi was used as a measure of strength of association. As a rule of thumb, it is usually required that all expected cell counts equal or exceed 5. This criterion is satisfied by most but not all of the cross-tabulations reported in this study. Thus, it is important to note that Cochran (1952), Camilli and Hopkins (1978), and others have demonstrated that contingency tables give accurate probability statements even when the expected frequencies in a minority of the cells are as low as 1 or 2. All of the analyses we present easily satisfy this criterion. A proportional-reduction-in-error (PRE) measure, which is not based on the chi-square statistic, is also presented to summarize each series of analyses (cf. Reynolds, 1977; Goodman & Kruskal, 1972).

Results

Frequency of Infertility

Of the 343 men, 15.2% (52) experienced infertility in their first marriage. This proportion is comparable to the national primary-infertility rate of 15% among couples of childbearing age, as estimated by the American Fertility Society (cf. Menning, 1980; Simons, 1982). This figure has remained fairly constant across time and social contexts. A population study in 1855, for instance, found the same figure (Blais, 1979) and more recent surveys have not found significant social class differences in the rate of involuntary childlessness (Shep & Ridley, 1965; Whelpton, Campbell, & Patterson, 1966).

In terms of the origin of each couple's fertility problem, 21% of the 52 husbands in our sample were identified as having a fertility problem (e.g., due to subnormal spermatogenesis, injuries, congenital anomalies). In contrast, 50% of the 52 men had wives with a fertility problem (e.g., due to malfunctioning ovaries, uterus, or fallopian tubes). Finally, in 29% of the cases, both the husband and wife had an identifiable medical problem. National statistics on who is "at fault" are inadequate, but it is often estimated that in 30 to 40% of the cases it is the husband's problem, in 30 to 40% of the cases it is the wife's problem, and in 20 to 30% of the cases it is a joint problem (cf. Dublin & Amelar, 1969; Howard & Schultz, 1979; Roland, 1968; Taymor, 1978). If this is correct, the number of infertile husbands may be under-represented in our sample. Alternatively, some husbands may have found it difficult to identify themselves as the sole source of "the problem;" or the male medical establishment, especially during the 1950s, might have been more inclined to identify the wife as the source of a couple's infertility.

The number of years spent trying to have a child--before an eventual birth, adoption, or decision to live childfree--varied greatly. Our findings indicate that 35% of the 52 cases devoted four years or fewer to the problem, 40% spent five to eight years, and 25% spent nine to twelve years.

Almost half (48%) of the cases were given medical hope that conception and a successful pregnancy would eventually be achieved, 21% were given virtually no hope of an eventual successful pregnancy, and 31% experienced an uncertain hope because their medical condition or diagnosis was very unclear.

Initial Substitutes

A minority of 13% (6) of the men primarily substituted themselves as an initial means of coping with their marital infertility and their need to be parents. A majority of 63% (30) of the men primarily substituted a non-human object that was treated as if it were their "baby." Finally, 25% (12) of the men primarily substituted parenting-like activities with the children of others. A rating was not possible for four of the men because of the incompleteness of their early interview files. No significant relationship was found between the type of parenting substitute chosen and any of the three medical background variables or the three social background variables.

Parenting Resolutions

In 44% (23) of the cases, couples decided to continue trying rather than adopt and finally did achieve a successful pregnancy. This figure was followed by 31% (16) of the cases in which the eventual decision was to remain childless rather than to adopt a child. Finally, 25% (13) of the subjects chose adoption.

A total of 48% (25) of all of the men in our sample eventually became birth fathers. This included 59% (23) of the 39 subjects who did not adopt and only 15% (2) of the 13 subjects who did adopt, contrary to the myth that adoption is often followed by a pregnancy. In fact, most previous research has also reported low post-adoption conception rates among infertile couples, ranging from 4% to 20% (for reviews, see Aaronson & Glienke, 1963; Lamb & Leurgans, 1979; Mai, 1973; MacNab, 1985; Mazor, 1984; Noyes & Chapnick, 1964; Simons, 1982).

It is estimated nationally that over 50% (perhaps as high as 60%) of all infertile couples of reproductive age who receive medical treatment do eventually conceive (cf. Howard & Schultz, 1979; Menning, 1977; Stangel, 1979). This figure is not dramatically higher than that of 48% for the men in our sample who eventually became birth fathers, a somewhat ironic similarity in light of the dramatic advances in the modern diagnosis and treatment of infertility problems. The therapeutic advantages of modern medicine are evident, however, in the length of time it takes to achieve these success rates. Arronet, Bergquist, and Parekh (1974) report, for instance, that 85% of all eventual pregnancies in their sample of 533 infertile couples occurred during the first two years after diagnosis; in contrast, only approximately 40% of all eventual successful pregnancies in our sample occurred during the first two years after an infertility problem was identified.

Insert Table 1 about here

Table 1 summarizes the relationship of the three types of parenting resolutions with the background variables and prior substitution-coping strategies. The association was weak and nonsignificant between the type of

parenting resolutions and all social background variables. The relationship between who was infertile and parenting outcome was also weak and nonsignificant; secondary analyses did indicate that the association between an individual (husband or wife) or joint (husband and wife) infertility problem cross-tabulated with a childless or adoption outcome approached significance, X^2 (1, N = 29) = 3.48, .05 < p < .10. The trend indicated that couples with a joint medical problem were more likely to choose to remain childless rather than adopt, and couples in which only one spouse had a medical problem were more likely to become adoptive parents.

The relationship between the presence of medical hope of eventually having a child and the type of parenting outcome chosen was strong (V = .52) and very highly significant (p < .0001). More specifically, childlessness rather than adoption was chosen by the majority (64%) of the 11 men who were given no medical hope of eventually having a child; adoption was chosen by half (50%) of the 16 men who were given uncertain medical hope of an eventual successful pregnancy; and almost all (80%) of the 25 men who were given clear medical hope resolved to wait for an eventual birth.

As Table 1 also indicates, a moderately strong (V = .37) and significant relationship (p < .01) exists between the number of years spent trying to have a child and the type of parenting resolution reached. Of those who spent more than eight years trying to have a child, only 7.6% eventually became fathers through birth and 23% through adoption. In contrast, 78% of those men who spent four or fewer years trying to have a child and 86% of those who spent five to eight years trying, became birth or adoptive parents. Examination of the continuous scale, for instance, indicated that there were two to six births per year for each additional year of trying up to eight years, but there was only one birth among the subjects who persevered more than eight years. In sum, couples who spent

more than eight years trying to have a child were significantly more likely to become neither birth nor adoptive parents, i.e., to end up completely childless.

Finally there was a moderately strong (V = .38) and significant (p < .01) association between the type of initial parenting substitute used and the type of parental resolution reached. A majority, 58%, of those men who substituted altruistic parent-like activities with the children of others eventually adopted. In contrast, only 13% of those men who initially substituted a non-human object became adoptive fathers, and none of those who initially used self-centered substitutes ever adopted.

We will now summarize the ability of the above findings to correctly predict an individual parenting outcome using a proportional-reduction-in-error procedure. The PRE was .41 for the association between medical hope as the independent variable and parental resolution as the dependent variable. Knowing whether medical hope existed, that is, improved one's ability to correctly predict the subsequent parenting outcome by 41% above what one would expect by chance. Knowing the number of years spent trying to have a child improved the PRE value by 7%, for a total of .48. Finally, adding in parenting substitutes improved the total predictive value by an additional 16%, thus, resulting in a 64% increase in correct prediction beyond chance.

Marital Outcomes

Twenty-three percent of the subjects' marriages ended in divorce, a rate that is only slightly higher than the divorce rate of 20.3% among the fertile subjects in the larger sample. Table 2 presents the association of marital outcome with the background variables and prior coping strategies. None of the medical or social background variables was significantly associated with marital outcomes. Secondary analyses did indicate that

there was a marginal trend for couples with a joint medical problem to remain married more frequently than couples in which only one spouse (husband or wife) had a medical problem [χ^2 (df = 1, $\underline{N}$ = 52) = 3.20, .05 < $\underline{p}$ < .10]. Previous research has also suggested that the attribution of a fertility problem to only one spouse has a more disruptive impact on marital equilibrium than when both partners have a medical problem (cf. Menning, 1977; Simons, 1982).

Insert Table 2 about here

One of the variables, initial parenting substitutes, was significantly associated with marital outcomes ($\underline{p}$ < .02, $\underline{Y}$ = .41). Only 33% of those men who used self-centered substitutes to initially cope with their infertility remained married. In contrast, 92% of those who substituted a child or other human activity and 80% of those who substituted an object remained married.

The PRE was .18 for the association between parenting substitute as the independent variable and marital outcome as the dependent variable. Knowing the type of parenting substitute used, that is, improved our ability to correctly predict the marital outcome by 18% beyond what would be expected by chance.

Personal Development Outcomes

A total of 32.7% of the subjects were identified as having achieved generativity. This is similar to the 35.1% who achieved generativity among the 291 fertile subjects in our sample.

Insert Table 3 about here

Table 3 summarizes the association of psychosocial development with the background variables and prior coping strategies. The achievement of generativity was not significantly associated with any of the medical background variables or with childhood social class. Childhood psychosocial development is significantly correlated with adulthood psychosocial development in the larger sample (r = .27, p < .001), but childhood industry does not predict the specific achievement of adulthood generativity in our sample of infertile men. In contrast, adulthood social class and all three of the prior infertility coping strategies were significantly associated with psychosocial development at midlife.

There was a highly significant (p < .002) and strong association (V = .50) between adult social class and psychosocial development. None in the lower class achieved generativity, while 25% in the working class and 67% in the middle class reached this stage. It must be remembered, however, that all of our subjects began life in the lower or working class and, thus, their adulthood middle class rating was an achieved status. It has been previously demonstrated that personal psychological development is highly correlated with social mobility even after controlling for social class of origin (Snarey & Vaillant, 1985; Vaillant & Milofsky, 1980). Therefore, it is probably social mobility rather than social class that underlies the present association.

Table 3 also indicates that none of the men who used self-centered substitutes became generative in later life, while 24% of those who substituted an object and 75% of those who substituted a child or other human activity achieved generativity in later adulthood. In addition, there was a significant (p < .02) and moderately strong association (V = .40) between parenting resolutions and subsequent psychosocial development. Of

those men who remained childfree, only 6% achieved generativity, while 39% of those who waited until the birth of their first child and 54% of those who adopted achieved generativity by middle adulthood. In sum, the infertile subjects who remained childless were significantly less likely to achieve generativity [6% vs. 35%; X^2 (1, N = 307) = 5.64, $p < .05$]. The rate of generativity among those who experienced infertility but who, after considerable delay, became birth fathers was not significantly different from the rate of generativity achievement among those husbands who never experienced infertility [39% vs. 35%; X^2 (1, N = 314) = 0.16, p = ns]. The rate of generativity among those who adopted was 19% higher than the rate for those who did not experience the crisis of infertility, but the difference was not statistically significant [54% vs. 35%; X^2 (1, N = 304) = 1.91, p = ns].

Finally, a significant ($p < .02$) and moderately strong association (V = .38) was found between marital outcomes and the men's psychosocial development. None of the men in our sample whose marriages ended in a divorce achieved generativity, while 43% of the men whose marriages remained intact were generative at midlife. Interestingly, 14% of the divorced men in the fertile sample achieved generativity—a higher, but not significantly higher rate than that among the divorced men in the infertile sample [X^2 (1,N = 71) = 1.83, p = ns].

We will now summarize the ability of the above variables to predict the eventual achievement of psychosocial generativity. The PRE was .29 for the association between adulthood social class as the independent variable and psychosocial development as the dependent variable. Adding in the parenting substitute further improved the predictive value by 9% to .38, and adding in parenting resolutions improved the predictive value by 6% to .44. Finally, adding in marital outcome improved the total predictive value by 6% to .50.

In sum, after controlling for the 29% of variance accounted for by adult social class, knowing all three infertility outcomes improved our ability to predict subsequent psychosocial development at midlife by 21%.

Discussion

Before discussing the findings and presenting our conclusions, we wish to note several caveats. First, the men in our sample are not fully representative of men in the United States in general. There were no blacks in the sample; none of the men in our sample were born into the middle class, although many had entered middle class occupations during early adulthood; and all grew up in urban communities. Therefore we must be cautious in generalizing our findings to more and less advantaged populations. Second, the men in our sample typically began trying to start a family in the early 1950s, a time when few physicians specialized in infertility and a broad array of medical procedures and options were not available (cf. Aral & Cates, 1983). Thus, the medical diagnosis and treatment of their problem was more difficult. Furthermore, our subjects did not have available the social supports for resolving their problem that relatively recent media coverage, publications, and social support agencies have currently made available to infertile couples (cf. Berg, 1984; Clark, 1982; Mazor, 1979; Menning, 1975, 1977, 1979; Michaels, 1980; Simons, 1982). Third, two of the outcome measures--parenting outcome and marital outcome--are obviously not solely dependent upon the men's choices. At the minimum, their wives clearly played a part in these decisions, but we do not have equivalent data available for them. The original data source places restrictions on methodological rigor, and one must interpret and evaluate within these constraints. At the same time, however, these constraints make it less, not more, likely that highly significant differences would be found

at all, let alone along the lines hypothesized.

This study has identified several factors that shed light on how married men cope with the problem of infertility and the impact of infertility on the achievement of generativity. First, the presence or absence of medical hope, as one would expect, is an important factor in how men cope with their infertility. In this sample, the men who were given medical hope of having a child in the future were more likely to wait for the birth of their child than they were to consider adoption or childfree living. The men with more severe medical problems and little or no medical hope of having a child in the future were more likely to remain childless; they were not, however, likely to turn to adoption. Rather, the rate of adoption was highest among those whose medical condition was unclear and whose hope was uncertain. It may have been that those with the clear answer of no medical hope felt less need to take additional action to resolve their infertility through adoption or they might have simply felt less hopeful about the success of any alternative, including adoption. In contrast, those with unclear hope appear to have felt a greater need and responsibility to personally make a choice that would resolve their problem. Some degree of hope, that is, may have left them with at least some sense of personal control.

Second, the number of years spent trying to have a child may affect the parenting resolution reached. Adoption, for instance, was least likely for those couples who spent more than eight years trying to have a child. While these subjects may simply have had a greater investment in parenting only their biological children, another possible explanation for this difference in adoption rates may be the consequential age differences resulting from waiting more years to begin a family. Those who try longer are not only, consequently, older when they finally consider adoption, but

they also tend to be exhausted, if not numb, by the constant stress (cf. Wicks, 1977). Furthermore, many subjects tended to feel "off time," that is, that they were behind where they should be in the socially-defined life cycle (cf. Neugarten, 1969, 1972), but some of those who had failed to conceive or to adopt for more than eight years also appeared to want to "catch up" by skipping the phase of parenthood.

Third, the type of initial parenting substitute used proved to be a robust predictor of the subjects' subsequent parenting outcomes, marital outcomes, and the men's psychosocial development. In this sample, subjects who exhibited narcissistic substitutes were most likely to remain childless, to divorce, and were least likely to achieve generativity in later life. In contrast, subjects who utilized parent-like substitute activities with the children of others were least likely to remain childless or become divorced and were the most likely to adopt a child. Subjects who used object substitutes were more likely to fall somewhere in between their counterparts.

Finally, variations in infertility coping strategies and outcomes appear to have an impact on the subsequent achievement of psychosocial generativity. Men who became fathers, either by birth or adoption, were more likely to be generative in middle adulthood than were childless men. Generativity was equally present, however, among infertile subjects who eventually became fathers through birth or adoption, and among fertile subjects in the larger sample who experienced no delay in achieving parenthood. The findings, therefore, lend support to the Eriksonian idea that the experience of parenting may be a necessary although not sufficient condition for the subsequent achievement of generativity at midlife.

These findings may have implications for physicians, social workers, and clinicians working with infertile couples. The extremely low conception

rate after eight years of trying affirms that, at some point, a couple must begin to consider adoption or risk ending up childless and perhaps developmentally stagnated. For instance, if a counselor sees that his or her client has used vicarious childrearing activities to cope with the crisis, it might be helpful to comment positively on the possibility of adoption for that individual. If a client is immersed in self-centered substitutes, however, supportive comments regarding adoption would be inappropriate and, probably, not well received. Adoption social workers might also inquire about the primary substitutes used by their clients before their decision to adopt. This information could help to confirm that a particular individual is a good candidate for becoming an adoptive parent. The findings of this study should not be used to rule out a particular adoption candidate, of course, since there were exceptions to virtually all of the patterns.

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Table 1

Association of Parenting Outcomes with Background Variables and Prior Coping Strategies

Prior independent variables	Parenting outcomes: Childless	Birth father	Adoptive father	n	X^2	df	V	p
Medical Background								
Who was infertile								
1. Wife	7	13	6					
2. Husband	3	2	6					
3. Joint	6	8	1	52	8.64	4	.29	ns
Medical hope								
1. None or low	7	1	3					
2. Unclear, uncertain	6	2	8					
3. Good or high	3	20	2	52	27.82	4	.52	<.00101
Years trying								
1. 4 or fewer	4	9	5					
2. 5 to 8	3	13	5					
3. 9 or more	9	1	3	52	14.16	4	.37	<.011
Social Background								
Childhood social class								
1. Lower	8	16	10					
2. Working	5	3	1	43	3.64	2	.29	ns
Boyhood development								
1. Industry low	2	2	1					
2. Industry moderate	11	14	7					
3. Industry high	2	7	5	51	2.46	4	.15	ns
Adulthood social class								
1. Lower	5	2	2					
2. Working	9	12	7					
3. Middle	2	9	4	52	5.18	4	.22	ns
Coping Strategies								
Parenting substitutes								
1. Self	1	5	0					
2. Object	12	14	4					
3. Child	2	3	7	48	14.09	4	.38	<.011

Table 2

Association of Marital Outcomes with Background Variables and Prior Coping Strategies

Prior independent variables	Marital outcomes: Divorced	Married	n	χ^2	df	Y	p
Medical Background							
Who was infertile							
1. Wife	7	19					
2. Husband	4	7					
3. Joint	1	14	52	3.58	2	.26	ns
Medical hope							
1. None or low	3	8					
2. Unclear, uncertain	5	11					
3. Good or high	4	21	52	1.42	2	.16	ns
Years trying							
1. 4 or fewer	5	13					
2. 5 to 8	4	17					
3. 9 or more	3	10	52	0.42	2	.09	ns
Social Background							
Childhood social class							
1. Lower	8	26					
2. Working	2	7	43	0.00	1	.00	ns
Boyhood development							
1. Industry low	0	5					
2. Industry moderate	6	26					
3. Industry high	5	9	51	3.18	2	.25	ns
Adulthood social class							
1. Lower	1	8					
2. Working	8	20					
3. Middle	3	12	52	1.28	2	.16	ns
Coping Strategies							
Parenting substitutes							
1. Self	4	2					
2. Object	6	24					
3. Child	1	11	48	8.09	2	.41	<.02
Parenting outcomes							
1. Childless	6	10					
2. Birth parent	4	19					
3. Adoptive parent	2	11	52	2.73	2	.22	ns

Table 3

Association of Psychosocial Development with Background Variables and Prior Coping Strategies

Prior independent variables	Psychosocial development: Did not achieve generativity	Psychosocial development: Achieved generativity	n	X^2	df	V	p
Medical Background							
Who was infertile							
1. Wife	17	9					
2. Husband	8	3					
3. Joint	10	5	52	0.19	2	.06	ns
Medical hope							
1. None or low	8	3					
2. Unclear, uncertain	9	7					
3. Good or high	18	7	52	1.28	2	.16	ns
Years trying							
1. 4 or fewer	11	7					
2. 5 to 8	13	8					
3. 9 or more	11	2	52	2.36	2	.21	ns
Social Background							
Childhood social class							
1. Lower	21	13					
2. Working	7	2	42	0.25	1	.14	ns
Boyhood development							
1. Industry low	2	3					
2. Industry moderate	24	8					
3. Industry high	8	6	51	3.17	2	.24	ns
Adulthood social class							
1. Lower	9	0					
2. Working	21	7					
3. Middle	5	10	52	12.99	2	.50	<.002
Coping Strategies							
Parenting substitutes							
1. Self	6	0					
2. Object	23	7					
3. Child	3	9	48	13.73	2	.53	<.002
Parenting outcomes							
1. Childless	15	1					
2. Birth parent	14	9					
3. Adoptive parent	6	7	52	8.11	2	.40	<.02
Marital outcomes							
1. Divorced	12	0					
2. Remained married	23	17	52	5.77	1	.38	<.02